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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,860	10/17/2003	Eric Earnst	63564-072 (ACCL-133)	9563

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Blakely, Sokoloff, Taylor & Zafman LLP
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025

EXAMINER	
SONG, HOON K	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/687,860	EARNST ET AL.
	Examiner	Art Unit
	Hoon Song	2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/5/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because "contents in a flowchart boxes of figure 2 are not shown". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 9 is objected to because of the following informalities:

In claim 9 at line 1, "said five degrees" lacks antecedent basis".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 7-16, 19-23, 32 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Murphy et al. (US 6125164).

Regarding claims 1, 3 and 32, Murphy teaches a patient positioning assembly for adjusting patient position during therapeutic radiation treatment, said patient positioning assembly comprising (figure 1):

a. a support device for supporting the patient during treatment;

b. at least one sensor for sensing the position and orientation of said support device, and for generating at least one sensor signal representative thereof (at least one sensor such as encoders is required to locate Murphy's portioning apparatus in response to the corrected signal);

c. a controller (44) for controlling the motion of said support device in order to align said target with respect to said treatment beam generator, said controller comprising (figure 1):

I) means (44) for receiving pre-treatment scan data (DDRs) representative of one or more pre-treatment scans of a treatment target within the patient, the pre-treatment scans showing the position and orientation (column 4 line 52, column 5 line 17) of said target with respect to a pre-treatment coordinate system (column 4 line 38);

ii) means (42, 36) for activating an imaging system so that said imaging system generates image data representative of at least one near real time image of said target (column 5 line 2), said image data containing information regarding the near real time position and orientation of said target (column 4 line 52 and column 5 line 6-17) with respect to a treatment coordinate system, said treatment coordinate system having a predetermined relationship to said pre-treatment coordinate system (figure 3); and

iii) means (44), responsive to said pre-treatment scan data (DDRs) and said image data (31), for generating at least one motion command signal for implementing one or more corrective motions of said support device (column 5 line 31-32), said corrective motions of said support device aligning said target with respect to said treatment apparatus so that the position and orientation of said target, as shown in said near real-time image data of said target, substantially match (X^2, column 5 line 25) the position and orientation of said target as shown in said pre-treatment scan data of said target (column 6 line 13).

Regarding claim 7, Murphy teaches said one or more corrective motions of said support device have at least three degrees of freedom (column 3 line 2).

Regarding claim 8, Murphy teaches said one or more corrective motions of said support device have at least five degrees of freedom (column 3 line 2).

Regarding claim 9, Murphy teaches said at least five degrees freedom comprise three translational degrees of freedom for translations along mutually orthogonal x-, y-, and z- coordinate axes (figure 6), and two rotational degrees of freedom for roll- and pitch- rotations around roll- and pitch- axes, respectively (figure 7).

Regarding claim 10, Murphy teaches said controller further comprises software for converting said information regarding near real time target location and orientation into one or more units of motion of said support device in at least one of said five degrees of freedom (figure 6 and 7).

Regarding claims 11 and 38, Murphy teaches an external device for correcting for a sixth degree of freedom of said corrective motion of said support device, wherein said sixth degree of freedom is a rotational degree of freedom for yaw-rotation about a yaw-axis (figure 7).

Regarding claim 12, Murphy teaches said external device comprises a robot (figure 3).

Regarding claim 13, Murphy teaches said controller (44) further comprises means for detecting, reporting, and correcting one or more errors (positional error, figure 1).

Regarding claim 14, Murphy teaches said one or more errors comprise at least one of: b) an error in said information regarding target position and orientation (positional error, figure 1).

Regarding claim 15, Murphy teaches said means for correcting one or more errors comprises at least one of: a. means for deactivating (44) said imaging system so as to prevent any further images from being acquired (any process before the determination of new patient position is considered deactivating the system)

Regarding claim 16, Murphy teaches support device comprises a table (figure 3).

Regarding claim 19, Murphy teaches said controller (44) has pre-programmed therein at least a first and a second position of said support device (any arbitrary positioning of the system such as position at resting or active, considered a first and second positions).

Regarding claim 20, Murphy teaches said first pre-programmed position of said support device corresponds to a mounting position for facilitating the mounting of said patient onto said support device (any arbitrary position or an initial position is considered the first position).

Regarding claim 21, Murphy teaches said second pre-programmed position of said support device corresponds to a nominal treatment position in which said patient was treated at a time period prior to the current treatment (any arbitrary position or active position is consider the second positioning).

Regarding claim 22, Murphy teaches said pre-treatment scan data comprise 3D scan data (column 4 line 34).

Regarding claim 23, Murphy teaches said pre-treatment scan data comprise at least one of: CT scan data (column 4 line 25).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Blumhofer et al. (US 6865253B2).

Regarding claims 1, 3 and 32, Blumhofer teaches a patient positioning assembly for adjusting patient position during therapeutic radiation treatment, said patient positioning assembly comprising (figure 4):

a. a support device for supporting the patient during treatment (figure 4);

b. at least one sensor for sensing the position and orientation of said support device, and for generating at least one sensor signal representative thereof (at least one sensor such as encoders is required to locate Blumhofer portioning apparatus in response to the corrected signal);

c. a controller (computer) for controlling the motion of said support device in order to align said target with respect to said treatment beam generator, said controller comprising (figure 4):

I) means (computer) for receiving pre-treatment scan data (column 2 line 32-34) representative of one or more pre-treatment scans of a treatment target within the patient, the pre-treatment scans showing the position and orientation of said target with respect to a pre-treatment coordinate system (column 2 line 32-34);

ii) means for activating an imaging system so that said imaging system generates image data representative of at least one near real time image of said target, said image data containing information regarding the near real time position and orientation of said target with respect to a treatment coordinate system, said treatment coordinate system

having a predetermined relationship to said pre-treatment coordinate system (column 2 line 27-29); and

iii) means (44), responsive to said pre-treatment scan data and said image data, for generating at least one motion command signal for implementing one or more corrective motions of said support device, said corrective motions of said support device aligning said target with respect to said treatment apparatus so that the position and orientation of said target, as shown in said near real-time image data of said target, substantially match the position and orientation of said target as shown in said pre-treatment scan data of said target (column 2 line 29-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 4-6, 17-18, 24-31 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Clark et al. (US 6810108B2).

Regarding claims 2, 4, 30-31 and 33-35, Murphy fails to teach said controller includes user interface means for enabling the user to interactively control said corrective motions of the support device, by implementing one or more user-selectable functions.

Clark teaches a controller includes user interface means (figures 11, 12) for enabling the user to interactively control corrective motions of a support device, by implementing one or more user-selectable functions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the positioning system of Murphy with the user interface, since the user interface would provide user convenience.

Regarding claim 5, Clark teaches a support device interface module for enabling said support device to interface with said sensor, said controller, said actuator, and said user interface means (figure 1, column 2 line 9-18).

Regarding claim 6, Clark said support device interface module includes; means for communicating with said sensor, so as to receive from said sensor said sensor signal; means for communicating with said controller, so as to provide position feedback to said controller in accordance with said sensor signal, and so as to receive said motion command signal from said controller; and means for communicating with said actuator so as to transmit said motion command signal from said remote controller onto said actuator (figure 1, column 2 line 9-18).

Regarding claim 17, Clark teaches said user interface means comprises a remote control module that provides a user with remote control capabilities for remote control of the motion of said support device (figure 11 and 12).

Regarding claim 18, Clark teaches said remote control module comprises a handheld pendant (mouse, column 8 line 12).

Regarding claim 24, Clark teaches said user interface means comprises one or more button icons respectively associated with said one or more user selectable functions, and wherein said user selectable functions comprise at least one of: a function for allowing the user to modify said sequence of translations and rotations (figure 11 and 12).

Regarding claim 25, Murphy as modified by Clark teaches said user selectable functions further comprise: a function for allowing the user to compare said translations and rotations with respective pre-specified limits for each translation and rotation (figure 1, Murphy); ii) a function for allowing the user to modify one or more of said pre-specified limits (figure 1, Murphy); and iii) a function for allowing the user to activate said treatment beam generator to initiate treatment delivery, upon verification that said translations and rotations identified by said motion command signal fall below said pre-specified limits (figure 1, Murphy).

Regarding claim 26, Murphy teaches said sequence of translations and rotations encompass up to six degrees of freedom (figure 6 and 7).

Regarding claim 27, Clark teaches said user interface means comprises at least one user interface screen (figure 11 and 12).

Regarding claim 28, Clark teaches the user interface screen comprises means for allowing the user to adjust one or more imaging parameters of said imaging system (figure 11 and 12).

Regarding claim 29, Murphy said imaging parameters comprise at least one of: b) a spectral distribution of said x-rays in said imaging beams (figure 12); e) one or more rigid body parameters (figure 11).

Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Fitchard et al. (US 6385286B1).

Regarding claim 36, Murphy fails to teach said corrective motions of said support device, implemented by said motion command signal generated by said controller, compensate for one or more patient motions of said patient that take place during treatment.

Fitchard teaches corrective motions of said support device, implemented by a motion command signal generated by a controller, compensate for one or more patient motions of said patient that take place during treatment (column 3 line 8-13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the therapy system of Murphy with the motion correction system as taught by Fitchard, since the motion correction would provide more accurate patient positioning and lesser target beam misalignment.

Regarding claim 37, Fitchard teaches said one or more patient motions comprise at least one of: d. cardiac pumping motion of the heart of the patient (column 3 line 8-13).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DAVID V. BRUCE
PRIMARY EXAMINER

HKS 5/23/05
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